Angle, from N. point, of	first contact, 103° towards the W.	for *direct* image.
	last contact, 78° towards the E.	
Angle, from Vertex, of	first contact, 44° towards the W.	
	last contact, 130° towards the E.	

Position near Ovar (Portugal)—Long. 8° 38′ W., Lat. 40° 50′ N.

	Local Mean Times.					Greenwich Mean Times.					Sun's Altitude.
		d.	h.	m.	s.		d.	h.	m.	s.	
Eclipse begins	May	28	2	8	35	May	28	2	43	7	56°
Totality begins	,,	28	3	27	10	,,	28	4	1	42	42°
Totality ends	,,	28	3	28	43	,,	28	4	3	15	
Eclipse ends	,,	28	4	38	42	,,	28	5	13	14	30°

Duration of Totality, 1m. 33·6s.

Angle, from N. point, of	first contact, 89° towards the W.	for *direct* image.
	last contact, 93° towards the E.	
Angle, from Vertex, of	first contact, 137° towards the W.	
	last contact, 38° towards the E.	

Position S.W. of Talavera de la Reina (Spain)—
Long. 5° 10′ W., Lat. 39° 47′ N.

	Local Mean Times.					Greenwich Mean Times.					Sun's Altitude.
		d.	h.	m.	s.		d.	h.	m.	s.	
Eclipse begins	May	28	2	29	18	May	28	2	49	58	53°
Totality begins	,,	28	3	46	2	,,	28	4	6	42	39°
Totality ends	,,	28	3	47	29	,,	28	4	8	9	
Eclipse ends	,,	28	4	55	38	,,	28	5	16	18	26°

Duration of Totality, 1m. 27·4s.

Angle, from N. point, of	first contact, 88° towards the W.	for *direct* image.
	last contact, 94° towards the E.	
Angle, from Vertex, of	first contact, 140° towards the W.	
	last contact, 38° towards the E.	

Position West of Puerto del Infierno (Spain)—
Long. 1° 43′ W., Lat. 38° 38′ N.

	Local Mean Times.					Greenwich Mean Times.					Sun's Altitude.
		d.	h.	m.	s,		d.	h.	m.	s.	
Eclipse begins	May	28	2	49	40	May	28	2	56	32	49°
Totality begins	,,	28	4	4	28	,,	28	4	11	20	35°
Totality ends	,,	28	4	5	49	,,	28	4	12	41	
Eclipse ends	,,	28	5	12	9	,,	28	5	19	1	23°

Duration of Totality, 1m. 21·5s.

Angle, from N. point, of	first contact, 87° towards the W.	for *direct* image.
	last contact, 94° towards the E.	
Angle, from Vertex, of	first contact, 143° towards the W.	
	last contact, 38° towards the E.	

Cape De Sta. Pola (Alicante), Spain—
Long. 0° 30′ W., Lat. 38° 13′ N.

	Local Mean Times.					Greenwich Mean Times.					Sun's Altitude.
		d.	h.	m.	s.		d.	h.	m.	s.	
Eelipse begins	May	28	2	56	47	May	28	2	58	47	48°
Totality begins	,,	28	4	10	52	,,	28	4	12	52	34°
Totality ends	,,	28	4	12	11	,,	28	4	14	11	
Eclipse ends	,,	28	5	17	55	,,	28	5	19	55	21°

Duration of Totality, 1m. 19·4s.

Angle, from N. point, of	first contact, 87° towards the W.	for *direct* image.
	last contact, 94° towards the E.	
Angle, from Vertex, of	first contact, 144° towards the W.	
	last contact, 38° towards the E.	

The accompanying map of the line of totality will show the parts of Spain and Portugal from which this eclipse can be observed. It will be seen that the track, after leaving Spain near Alicante, crosses the Mediterranean and enters Africa close to Algiers.

We may be perfectly certain that the astronomers of the United States and France will man the beginning and the end of the line quite efficiently. It is clear, therefore, that the attention of British astronomers with serious work to do will be directed to the observing stations in Spain and Portugal.

The weather chances were stated by Prof. Arcimis in a former number of NATURE,[1] and may be considered excellent.

There are many branches of work, such as securing photographs of the corona, in which amateurs may do good service. For them the well-found steamers leaving Marseilles may make the coast near Algiers more convenient.

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[1] Vol. lix. p. 439.

HERO OF ALEXANDRIA.[1]

THE reputation of Hero of Alexandria has always been somewhat doubtful, and some difficulty has been felt in apportioning to him his proper place among the scientific worthies of the past. Mr. Schmidt, however, in the communication mentioned below, has attempted to do justice to his reputation, and to resuscitate the memory of him whom most of us remember only through the well-known experiment of Hero's fountain. In another place Mr. Schmidt has endeavoured to fix the approximate date of his career, and by his intimate acquaintance with the various MSS. and authorities, to do something to clear away the doubts that linger around a Hero the younger and some other anonymous writers. Mr. Schmidt may be said to have taken Hero under his particular care, and though, of course, it is unfortunate that many of the original writings are not extant, and that others have not been printed yet, Mr. Schmidt, by a careful study of the remnants, has probably placed himself in a better position to reconstruct the history of this ancient philosopher than any other commentator.

But though Mr. Schmidt attempts to place the object of his study in the most favourable light, to make us see in him one as influential as Euclid, we cannot say that we think the steps he has taken are the most judicious or the most successful. Instead of a philosopher we perceive rather an able artificer and an expert mechanician. The points selected for elaborate illustration are not those which exhibit Hero in the most capable light. There can be no doubt but that Hero successfully solved the problem of determining the area of a triangle from the three sides, and it would have been very interesting to see the method he employed set out in detail, but the author passes over this feat with a bare mention, although the treatment of such a problem appeals more potently to modern students, and bespeaks a higher position in the intellectual scale, than the skilful manipulation of automatic figures over the details of which Mr. Schmidt lovingly lingers. Again, we have indistinct ideas of his experiments on the elasticity of air and steam, and we should like to know whether he made any approach to a knowledge of Boyle's law, and in any way anticipated its enunciation by that philosopher. Of course it may be urged that these are among the best-known results of Hero's life and writings, and that as such they do not need the aid of a commentator, but

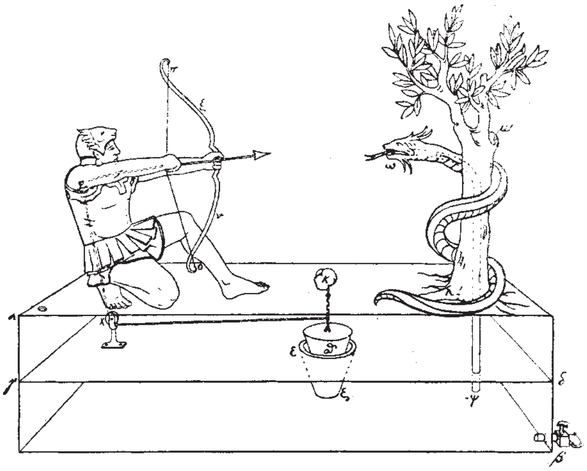

FIG. 1.—Hercules shooting at the apple.

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[1] "Heron von Alexandria." By W. Schmidt. Sonder abdruck aus den neuen Jahrbüchern für das Klassische Altertum Geschichte und Deutsche Litteratur. (Leipzig: B. G. Teubner, 1899.)

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that on the other hand his numerous mechanical devices need to be insisted upon in order to obtain an adequate idea of his varied capacity. But the result is, nevertheless, to present Hero simply as the maker of philosophic toys.

Mr. Schmidt sketches for us, but without sufficient explanation, the devices by which fountains were made to flow, and doors to open by unseen mechanical agency, but one's enthusiasm is scarcely roused though Hercules may shoot at an apple and a serpent be made to hiss his discontent with the arrangement (Fig. 1). But the author does ample justice to the description of the automatic marionettes, whose behaviour and contortions afforded sincere delight to the spectator. Two of these automatic theatres, in which some attempt at dramatic action was made, are described in detail, and we learn how the fire was suddenly kindled on the altar of Dionysius, while from the Thyrsus cup spouted respectively milk and wine, the Bacchantes urging their wild career at the same time (Fig. 2). The legend, too, of Nauplius seems to have been illustrated with great care and nicety in a succession of scenes, in which were represented the departure of the Greek ships, the rising of a storm, and the luring of the ill-fated Greeks by lighted torches to the dangerous promontory of Caphareus where they suffered shipwreck. All this tale is told, with the proper accompaniment of lightning and thunder, by means of moving and hidden machinery. Even Ajax is made to swim towards the land, and subsequently to perish in one of various ways according to the fancy of the stage manager. That Hero should devote himself to the construction of the necessary tricks, required to reproduce these scenes, when he seemed clearly capable of higher intellectual flight, does not increase our respect for his memory; but Mr. Schmidt, whose philological tastes seem to be in advance of his scientific, seems to think it would be worth while to reconstruct the machinery, and play the little drama over again to a select audience. He admits the difficulties, both in following the original MSS. and in filling up some necessary lacunæ, but considers the labour would be well spent, since it would illustrate in a most realistic manner the amusements of the ancient inhabitants of Alexandria.

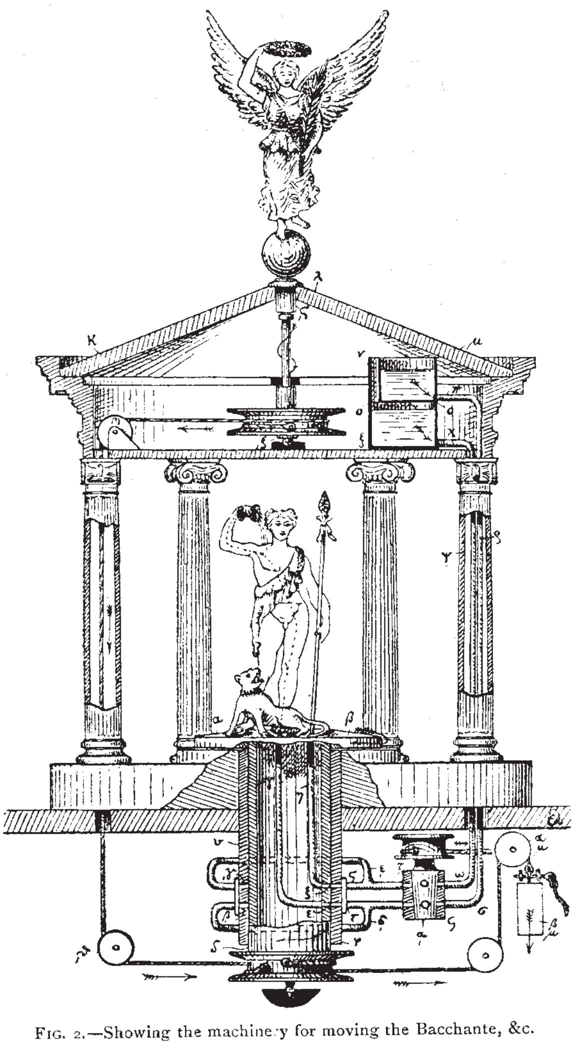

Fig. 2.—Showing the machinery for moving the Bacchante, &c.

THE SITUATION OF OPHIR.

A REUTER'S correspondent has had an interview with Dr. Carl Peters on the subject of the re-discovery and identification of the ancient gold-bearing site now so well known by the name of Ophir. According to the eminent German traveller, this much discussed locality is situated on or near the Zambesi river, and he is confident that the theories which would place Ophir either in India or in Arabia are both wrong. Dr. Peters is not the first who has convinced himself that Ophir lay somewhere on the east coast of Africa, for the late Mr. Bent and other recent writers believed that they had identified the famous emporium whence Solomon, the king of Israel, obtained gold for the temple at Jerusalem. It must, of course, be admitted that remains of extensive gold workings undoubtedly exist in the locality, and that these possess considerable antiquity cannot be denied. It is, however, open to discussion whether the ruins and workings are "of undoubtedly Semitic type," and also whether the emblems which Dr. Peters identifies as phallic are really connected with "the ancient Semitic sun worship." Until Dr. Peters distinctly states his case in print, and gives his reasons for the faith which is in him, we can do little more than point out that up to the present the theory which would place Ophir, or Aphar, or Sôphir (1 Kings ix. 28; x. 11; 2 Chron. viii. 18; ix. 10) the great metropolis of the Sabeans, which is described in the "Periplus" attributed to Arrian, on the Gulf of Akabah, has not been disproved. The theory which would place Ophir in India, on the banks of the Indus, has much in its favour, and when it is remembered that the precious stones and *almug* trees, which are mentioned with the gold of Ophir, are the peculiar products of India, it is a little difficult not to accept it without more ado. On the other hand, the apes and peacocks (or parrots as some would translate the word *tukkiyyîm*), which were brought to Solomon from the neighbourhood of Ophir, indicate that its site was nearer Palestine than India; for it is well known that peacocks would not survive a long voyage which must have lasted several months, and must also have been made in an open boat. The fact is that many places can produce, and must always have produced, gold in great abundance, and we are driven irresistibly to the conclusion that more than one place bore the name of Ophir.

It is not necessary for the Ophir, whence Solomon obtained gold, to have been situated as near as the northern end of the Red Sea, for it is most likely that the seamen, who traded through Hiram, with him obtained the goods which they had to sell from the larger boats which sailed through Bâb el-Mandeb either to India, or to ports on the north-east and east coasts of Africa. Meanwhile Dr. Peter's claim to the discovery of the Ophir mentioned in the Bible will evoke consider-

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